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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
David Wayne Duckert et al.

Serial No.: 10/681,631

Filed: October 8, 2003

For: CUSTOMIZED MEDICAL EQUIPMENT PREVENTATVE MAINTENANCE METHOD AND SYSTEM

Group Art Unit: 2857

Examiner: Desta, Elias

Atty. Docket: GEMS:0204/YOD/RAR/EUB
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February 21, 2006
Date

Stephanie Shamgar

APPEAL BRIEF PURSUANT TO 37 C.F.R. §§ 41.31 AND 41.37

This Appeal Brief is being filed in furtherance to the Notice of Appeal mailed on December 14, 2005, and received by the Patent Office on December 21, 2005.

The Commissioner is authorized to charge the requisite fee of $500.00 for this Appeal Brief, and any additional fees which may be necessary to advance prosecution of the present application, to Deposit Account No. 50-2401, Order No. 132949/YOD (GEMS:0204). Further, in accordance with 37 C.F.R. § 1.136, Appellants hereby provide a general authorization to treat this and any future reply requiring an extension of time as incorporating a request therefor. Furthermore, Appellants authorize the Commissioner to charge the appropriate fee for any extension of time to Deposit Account No. 50-2401, Order No. 132949/YOD (GEMS:0204).

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Conclusion

In view of the above remarks, Appellants respectfully submit that the Examiner has provided no supportable position or evidence that would justify the present improper rejections of claims 1-50. Consequently, Appellants respectfully submit that all pending claims are in condition for allowance. However, if the Examiner or Board wishes to resolve any other issues by way of a telephone conference, the Examiner or Board is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

Date: February 21, 2006

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1. REAL PARTY IN INTEREST

The real party in interest is General Electric Medical Systems Information Technology, Inc., the Assignee of the above-referenced application by virtue of the Assignment recorded at reel 014597, frame 0763, and recorded on October 8, 2003. General Electric Medical Systems Information Technology, Inc., the Assignee of the above-referenced application as evidenced by the documents mentioned above, will be directly affected by the Board's decision in the pending appeal.

2. RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any other appeals or interferences related to this appeal. The undersigned is Appellants' legal representative in this appeal.

3. STATUS OF CLAIMS

Claims 1-50 are currently pending, are currently under final rejection, and, thus, are the subject of this appeal.

4. STATUS OF AMENDMENTS

The instant claims have not been amended subsequent to the Final Office Action mailed September 14, 2005. Consequently, there are no outstanding amendments to be considered by the Board.

5. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention relates generally to preventative maintenance of devices and, more specifically, to determining preventative maintenance service intervals for one or more devices. *See* Application, page 1, lines 6-8. The present application contains fifteen independent claims, namely claims 1, 11, 18, 26, 30, 34, 38-45, and 48, all of which have been improperly rejected and, thus, subject to this appeal. The subject matter of the independent claims is summarized below.

With respect to the aspect of the invention set forth in independent claim 1, discussions of the recited features of claim 1 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a method for determining a service interval for a device, the method comprising collecting (e.g., 86) one or more data points (e.g., 94) regarding a device (e.g., 84). *See, e.g., id.* at page 13, line 22 – page 14, line 14; FIG. 6. The method also includes comparing (e.g., 98) the one or more data points to at least one associated reliability curve (e.g., 96) for a population of similar devices. *See, e.g., id.* at page 14, line 16 – page 15, line 1. Additionally, the method includes calculating (e.g., 100) a service interval for the device based at least upon the comparison of the one or more data points and the reliability curve. *See, e.g., id.* at page 15, lines 1-13.

Regarding the aspect of the invention set forth in independent claim 11, discussions of the recited features of claim 11 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a method for selecting a service interval from a plurality of service intervals, the method including collecting (e.g., 86) one or more data points (e.g., 94) regarding a device (e.g., 84) from a plurality of data sources. *See, e.g., id.* at page 13, line 22 – page 14, line 14; page 15, lines 15-22. Further, the method includes calculating (e.g., 100) a service interval for each data source by at least comparing (e.g., 98) the one or more data points from the data sources and at least one associated reliability curve (e.g., 96). *See, e.g., id.* at page 14, line 16 – page 15, line 13. Still further, the method includes selecting an optimal service interval from the plurality of service intervals. *See, e.g., id.* at page 15, lines 15-22.

Concerning the aspect of the invention set forth in independent claim 18, discussions of the recited features of claim 18 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a method for determining service intervals for a plurality of devices. This method includes collecting (e.g., 86) one or more data points (e.g., 94) regarding a plurality of devices (e.g., 84). *See, e.g., id.* at page 13, line 22 – page 14, line 14; page 15, lines 15-22. The method additionally includes calculating (e.g., 100) a service interval for each device by at least comparing (e.g., 98) the one or more data points associated with the device and at least one associated reliability curve (e.g., 96), and selecting an optimal service interval for one or more of the devices from the plurality of service intervals. *See, e.g., id.* at page 14, line 16 – page 15, line 22.

In regard to the aspect of the invention set forth in independent claim 26, discussions of the recited features of claim 26 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a system for determining a service interval for a device. The system includes a computer (e.g., 22 or 26) and a device (e.g., 16, 18, or 20) connected to the computer through a network (e.g., 32). *See, e.g., id.* at page 5, lines 6-27; page 7, lines 6-8; FIG. 1. The device is configured to collect (e.g., 86) one or more data points (e.g., 94) regarding a device (e.g., 84) and compare (e.g., 98) the one or more data points to at least one associated reliability curve (e.g., 96) for a population of similar devices. *See, e.g., id.* at page 13, line 22 – page 15, line 1; FIG. 6. The device is also configured to calculate (e.g., 100) a service interval for the device based at least upon the comparison of the one or more data points and the reliability curve. *See, e.g., id.* at page 15, lines 1-13.

With respect to the aspect of the invention set forth in independent claim 30, discussions of the recited features of claim 30 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a system for determining a service interval from a plurality of service intervals, the system including a computer (e.g., 22 or 26) and a device (e.g., 16, 18, or 20) connected to the computer through a network (e.g., 32). *See, e.g., id.* at page 5, lines 6-27; page 7, lines 6-8; FIG. 1. The device is configured to collect (e.g., 86) one or more data points (e.g., 94) regarding a device (e.g., 84) from a plurality of data sources. *See, e.g., id.* at page 13, line 22 – page 14, line 14; page 15, lines 15-22. The device is additionally configured to calculate (e.g., 100) a service interval for each data source by at least comparing (e.g., 98) the one or more data points from the data sources and at least one associated reliability curve (e.g., 96), and select an optimal service interval from the plurality of service intervals. *See, e.g., id.* at page 14, line 16 – page 15, line 22.

With respect to the aspect of the invention set forth in independent claim 34, discussions of the recited features of claim 34 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a system for determining service intervals for a plurality of devices, the system including a computer (e.g., 22 or 26) and a plurality of devices (e.g., 16, 18, or 20) connected to the computer through a network (e.g., 32). *See, e.g., id.* at page 5, lines 6-27; page 7, lines 6-8; FIG. 1. The devices are configured to collect (e.g., 86) one or more data points (e.g., 94) regarding a plurality of devices (e.g., 84). *See, e.g., id.* at page 13, line 22 – page 14, line 14; page 15, lines 15-22. Furthermore, the devices are configured to calculate (e.g., 100) a service interval for each device by at least comparing (e.g., 98) the one or more data points associated with the device and at least one associated reliability curve (e.g., 96), and select an optimal service interval for one or more of the devices from the plurality of service intervals. *See, e.g., id.* at page 14, line 16 – page 15, line 22.

Regarding the aspect of the invention set forth in independent claim 38, discussions of the recited features of claim 38 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a system for determining a service interval for a device. Appellants note that claim 38 recites elements described in means-plus-function language as permitted by 35 U.S.C. § 112, sixth paragraph, and that each of the recited elements should be interpreted in accordance with this body of law. The system includes means for collecting one or more data points regarding a device. As discussed in the specification, the means for collecting include a computer (e.g., 26) programmed with data collection routines configured to collect data points (e.g., 94) regarding a device (e.g., 84) from the device itself or some other system (e.g., server 22) directly or via sensors, such as a run time meter, a cycle counter, a continuous system monitor, or a self-test monitor. *See, e.g., id.* at page 5, line 19 – page 6, line 3; page 6, lines 5-24; *see also, e.g., id.* at page 13, line 22 – page 14, line 14 (describing the functionality provided by the means for collecting). The system further includes means for comparing the one or more data points to at least one associated reliability curve for a population of similar devices. As discussed in the specification, the means for comparing include a computer (e.g., 26) programmed to compare data points to one or more associated reliability curves (e.g., 96). *See, e.g., id.* at page 5, line 19 – page 6, line 3; *see also, e.g., id.* at page 14, line 16 – page 15, line 1 (discussing such reliability curves and the functionality provided by the means for comparing). Finally, the system also includes means for calculating a service interval for the device based at least upon the comparison of the one or more data points and the reliability curve. The means for calculating include a computer (e.g., 26) programmed to calculate a service interval based, at least in part, on the output of the other recited means. *See, e.g., id.* at page 5, line 19 – page 6, line 3; *see also, e.g., id.* at page 15, lines 1-13 (describing the functionality provided by the means for calculating).

In regard to the aspect of the invention set forth in independent claim 39, discussions of the recited features of claim 39 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a system for determining a service interval from a plurality of service intervals. Appellants note that claim 39 recites elements described in means-plus-function language as permitted by 35 U.S.C. § 112, sixth paragraph, and that each of the recited elements should be interpreted in accordance with this body of law. The system includes means for collecting one or more data points regarding a device from a plurality of data sources. The means for collecting include a computer (e.g., 26) programmed with data collection routines configured to collect data points (e.g., 94) regarding a device (e.g., 84) from a plurality of sources. *See, e.g., id.* at page 5, line 19 – page 6, line 3; *see also, e.g., id.* at page 13, line 22 – page 14, line 14 (describing the functionality provided by the means for collecting). The plurality of sources may include sensors or a computer, such as server 22. *See, e.g., id.* at page 6, lines 5-24. The system also includes means for calculating a service interval for each data source by at least comparing the one or more data points from the data sources and at least one associated reliability curve. The means for calculating include a computer (e.g., 26) programmed to calculate a service interval for each data source based, at least in part, on a comparison of the data source to an associated reliability curve. *See, e.g., id.* at page 5, line 19 – page 6, line 3; *see also, e.g., id.* at page 14, line 16 – page 15, line 13 (describing the functionality provided by the means for calculating). Additionally, the system includes means for selecting an optimal service interval from the plurality of service intervals. The means for selecting include a computer (e.g., 26) programmed to select the optimal service interval. *See, e.g., id.* at page 5, line 19 – page 6, line 3; *see also, e.g., id.* at page 15, line 15 – page 16, line 6 (describing the functionality provided by the means for selecting).

With respect to the aspect of the invention set forth in independent claim 40, discussions of the recited features of claim 40 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a computer program for determining a service interval for a device, including a computer readable medium configured to store machine executable code and a computer program stored on the medium. *See, e.g., id.* at page 5, line 29 – page 6, line 1. A program stored on the medium includes executable routines for collecting (e.g., 86) one or more data points (e.g., 94) regarding a device (e.g., 84). *See, e.g., id.* at page 13, line 22 – page 14, line 14; FIG. 6. The program also includes executable routines for comparing (e.g., 98) the one or more data points to at least one associated reliability curve (e.g., 96) for a population of similar devices, and for calculating (e.g., 100) a service interval for the device based at least upon the comparison of the one or more data points and the reliability curve. *See, e.g., id.* at page 14, line 16 – page 15, line 13.

With respect to the aspect of the invention set forth in independent claim 41, discussions of the recited features of claim 41 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a computer program for determining a service interval from a plurality of service intervals, including a computer readable medium configured to store machine executable code. *See, e.g., id.* at page 5, line 29 – page 6, line 1. A program stored on the medium includes executable routines for collecting (e.g., 86) one or more data points (e.g., 94) regarding a device (e.g., 84) from a plurality of data sources. *See, e.g., id.* at page 13, line 22 – page 14, line 14; page 15, lines 15-22. The program also includes executable routines for calculating (e.g., 100) a service interval for each data source by at least comparing (e.g., 98) the one or more data points from the data sources and at least one associated reliability curve (e.g., 96), and for selecting an optimal service interval from the plurality of service intervals. *See, e.g., id.* at page 14, line 16 – page 15, line 22.

Regarding the aspect of the invention set forth in independent claim 42, discussions of the recited features of claim 42 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a computer program for determining service intervals for a plurality of devices, including a computer readable medium configured to store machine executable code. *See, e.g., id.* at page 5, line 29 – page 6, line 1. A program stored on the medium includes executable routines for collecting (e.g., 86) one or more data points (e.g., 94) regarding a plurality of devices (e.g., 84). *See, e.g., id.* at page 13, line 22 – page 14, line 14; page 15, lines 15-22. The stored program also includes routines for calculating (e.g., 100) a service interval for each device by at least comparing (e.g., 98) the one or more data points associated with the device and at least one associated reliability curve (e.g., 96), and for selecting an optimal service interval for one or more of the devices from the plurality of service intervals. *See, e.g., id.* at page 14, line 16 – page 15, line 22.

Regarding the aspect of the invention set forth in independent claim 43, discussions of the recited features of claim 43 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a device capable of determining its own service interval. Appellants note that claim 43 recites elements described in means-plus-function language as permitted by 35 U.S.C. § 112, sixth paragraph, and that each of the recited elements should be interpreted in accordance with this body of law. The device includes means for collecting one or more data points regarding a device. As discussed in the specification, the means for collecting include a computer (e.g., 26) programmed with data collection routines configured to collect data points (e.g., 94) regarding a device (e.g., 84) from the device itself or some other system (e.g., server 22) directly or via sensors, such as a run time meter, a cycle counter, a continuous system monitor, or a self-test monitor. *See, e.g., id.* at page 5, line 15 – page 6, line 3; page 6, lines 5-24; *see also, e.g., id.* at page 13, line 22 – page 14, line 14 (describing the functionality provided by the means for collecting). The device further includes means for comparing the one or more data points to at least one associated reliability curve for a population of similar devices. As discussed in the specification, the means for comparing include a computer (e.g., 26) programmed to compare data points to one or more associated reliability curves (e.g., 96). *See, e.g., id.* at page 5, line 15 – page 6, line 3; *see also, e.g., id.* at page 14, line 16 – page 15, line 1 (discussing such reliability curves and the functionality provided by the means for comparing). Finally, the device also includes means for calculating a service interval for the device based at least upon the comparison of the one or more data points and the reliability curve. The means for calculating include a computer (e.g., 26) programmed to calculate a service interval based, at least in part, on the output of the other recited means. *See, e.g., id.* at page 5, line 15 – page 6, line 3; *see also, e.g., id.* at page 15, lines 1-13 (describing the functionality provided by the means for calculating).

Regarding the aspect of the invention set forth in independent claim 44, discussions of the recited features of claim 44 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a device capable of determining a service interval from a plurality of service intervals. Appellants note that claim 44 recites elements described in means-plus-function language as permitted by 35 U.S.C. § 112, sixth paragraph, and that each of the recited elements should be interpreted in accordance with this body of law. The device includes means for collecting one or more data points regarding a device from a plurality of data sources. The means for collecting include a computer (e.g., 26) programmed with data collection routines configured to collect data points (e.g., 94) regarding a device (e.g., 84) from a plurality of sources. *See, e.g., id.* at page 5, line 19 – page 6, line 3; *see also, e.g., id.* at page 13, line 22 – page 14, line 14 (describing the functionality provided by the means for collecting). The plurality of sources may include sensors or a computer, such as server 22. *See, e.g., id.* at page 6, lines 5-24. The device also includes means for calculating a service interval for each data source by at least comparing the one or more data points from the data sources and at least one associated reliability curve. The means for calculating include a computer (e.g., 26) programmed to calculate a service interval for each data source based, at least in part, on a comparison of the data source to an associated reliability curve. *See, e.g., id.* at page 5, line 19 – page 6, line 3; *see also, e.g., id.* at page 14, line 16 – page 15, line 13 (describing the functionality provided by the means for calculating). Additionally, the device includes means for selecting an optimal service interval from the plurality of service intervals. The means for selecting include a computer (e.g., 26) programmed to select the optimal service interval. *See, e.g., id.* at page 5, line 19 – page 6, line 3; *see also, e.g., id.* at page 15, line 15 – page 16, line 6 (describing the functionality provided by the means for selecting).

With respect to the aspect of the invention set forth in independent claim 45, discussions of the recited features of claim 45 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a device including an operator interface unit (e.g., 24, 28, and 30) and a processor unit (e.g., 26). *See, e.g., id.* at page 5, lines 15-27. The processor unit is configured to collect (e.g., 86) one or more data points (e.g., 94) regarding a device (e.g., 84). *See, e.g., id.* at page 13, line 22 – page 14, line 14; FIG. 6. The processor unit is also configured to compare (e.g., 98) the one or more data points to at least one associated reliability curve (e.g., 96) for a population of similar devices, and to calculate (e.g., 100) a service interval for the device based at least upon the comparison of the one or more data points and the reliability curve. *See, e.g., id.* at page 14, line 16 – page 15, line 13.

Finally, regarding the aspect of the invention set forth in independent claim 48, discussions of the recited features of claim 48 can be found at least in the below cited locations of the specification and drawings. By way of example, an embodiment in accordance with the present invention relates to a device including an operator interface unit (e.g., 24, 28, and 30) and a processor unit (e.g., 26). *See, e.g., id.* at page 5, lines 15-27. The processor unit is configured to collect (e.g., 86) one or more data points (e.g., 94) regarding a device (e.g., 84) from a plurality of data sources. *See, e.g., id.* at page 13, line 22 – page 14, line 14; page 15, lines 15-22. The processor unit is further configured to calculate (e.g., 100) a service interval for each data source by at least comparing (e.g., 98) the one or more data points from the data sources and at least one associated reliability curve (e.g., 96), and to select an optimal service interval from the plurality of service intervals. *See, e.g., id.* at page 14, line 16 – page 15, line 22.

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

First Ground of Rejection for Review on Appeal:

Appellants respectfully urge the Board to review and reverse the Examiner's first ground of rejection in which the Examiner improperly rejected claims 1-25 under 35 U.S.C. § 101 as directed to non-statutory subject matter.

Second Ground of Rejection for Review on Appeal:

Appellants respectfully urge the Board to review and reverse the Examiner's second ground of rejection in which the Examiner also improperly rejected claims 1-50 under 35 U.S.C. § 102(e) as unpatentable over U.S. Patent Publication No. 2004/0117153 of Siegel et al. ("the Siegel et al. reference").

7. **ARGUMENT**

As discussed in detail below, the Examiner has improperly rejected the pending claims. Further, the Examiner has misapplied long-standing and binding legal precedents and principles in rejecting the claims under 35 U.S.C. §§ 101 and 102. Accordingly, Appellants respectfully request full and favorable consideration by the Board, as Appellants strongly believe that claims 1-50 are currently in condition for allowance.

A. **Ground of Rejection No. 1:**

The Examiner improperly rejected claims 1-25 under 35 U.S.C. § 101 as directed to non-statutory subject matter. Because this rejection is clearly and directly contrary to previous binding decisions of the Board, as well as the binding precedent of the Federal Circuit, Appellants respectfully traverse this rejection.

Legal Precedent

Any analysis of whether a claim is directed to statutory subject matter begins with the language of 35 U.S.C. § 101, which reads: "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent thereof, subject to the conditions and requirements of this title." 35 U.S.C. § 101. In interpreting this section, the Supreme Court stated that Congress intended statutory subject matter to "include *anything* under the sun that is made by man." *Diamond v. Chakrabarty*, 447 U.S. 303, 309, 206 U.S.P.Q. 193, 197 (1980) (emphasis added). Although this statement may appear limitless, the Supreme Court has identified three categories of unpatentable subject matter: laws of nature, natural phenomena, and abstract ideas. *See Diamond v. Diehr*, 450 U.S. 175, 182, 209 U.S.P.Q. 1, 7 (1981). However, claims containing practical applications of such judicial exceptions will still be considered as directed to patentable subject matter. *See Diehr*, 450 U.S. at 187, 209 U.S.P.Q. at 8. A claimed invention has a practical application if it produces a "useful, concrete and tangible result." *State Street Bank & Trust Co. vs. Signature Financial Group, Inc.*, 47 U.S.P.Q.2d 1596, 1601-02 (Fed. Cir. 1998)

For example, the fact that a claim includes or is directed to an algorithm is no ground for holding a claim is directed to non-statutory subject matter. *See, In re Iwashashi,* 12 U.S.P.Q.2d 1908, 1911 (Fed. Cir. 1989). Rather, the proscription against patenting an algorithm, to the extent it still exists, is narrowly limited to *mathematical algorithms in the abstract*, e.g., describing a mathematical algorithm as a procedure for solving a given type of mathematical problem. *See, AT&T Corp. v. Excel Communications, Inc.*, 50 U.S.P.Q.2d 1447, 1450 (Fed. Cir. 1999). Indeed, the courts are aware that any step-by-step process, be it electronic, chemical, or mechanical, involves an algorithm. *Id.* at 1450.

Thus, inquiry into what is statutory subject matter simply requires "an examination of the contested claims to see if the claimed subject matter as a whole is a disembodied mathematical concept representing nothing more than a 'law of nature' or an 'abstract idea,' or if the mathematical concept has been reduced to some practical application rendering it 'useful.' " *Id.* at 1451 (citing and quoting *In re Alappat*, 31 U.S.P.Q.2d 1545, 1557 (Fed. Cir. 1994)). Furthermore, a § 101 analysis "demands that the focus in any statutory subject matter analysis be on the *claim as a whole*." *In re Alappat*, 31 U.S.P.Q.2d at 1557 (citing *Diehr*, 450 U.S. at 192) (emphasis in original). Indeed, the dispositive inquiry is whether the claim *as a whole* is directed to statutory subject matter, it is irrelevant that a claim may contain, as part of the whole, subject matter that would not be patentable by itself. *Id.*

Deficiencies of the Rejection

In view of this precedent, the Examiner has not provided a legally cognizable reason for asserting that the present claims are not directed to eligible subject matter. In the Office Action, the Examiner contends that method claims 1-25 are unpatentable because they do not require performance of any of the steps by a machine or a computer, and that the same analysis could be performed mentally by one of ordinary skill in the art. *See* Final Office Action mailed September 14, 2005, page 2. Appellants respectfully note that, as evidenced by extensive case law, including those cases cited above, a method claim does not have to be performed by a machine in order to be eligible subject matter. In fact, the Examiner's rejection is, at best, the application of two tests – the "technological arts" test and the "mental steps" doctrine – that have been explicitly refuted by precedential decisions, and are directly opposed to the controlling law of the Federal Circuit as set forth above.

Beginning with the latter improper test, the mental steps doctrine was considered and rejected as a proper test of patentable subject matter by the Court of Customs and Patent Appeals over thirty-five years ago, and subsequent cases further support this decision. *See, e.g., In re Musgrave*, 431 F.2d 882, 167 U.S.P.Q. 280 (C.C.P.A. 1970). With respect to the "technological arts" test, this test is not in accordance with the current body of law of the Federal Circuit, and has been explicitly rejected by various courts. *See, e.g., In re Toma*, 575 F.2d 872, 197 U.S.P.Q. 852 (C.C.P.A. 1978). Notably, the Board itself recently confirmed the impropriety of the application of a "technological arts" test in its recent, precedential *Lundgren* case. *See Ex parte Lundgren*, 76 U.S.P.Q.2d 1385, 1388 (Bd. Pat. App. & Int. 2005) ("Our determination is that there is currently no judicially recognized separate 'technological arts' test to determine patent eligible subject matter under § 101.") In fact, the Patent Office has recently issued new examination guidelines that acknowledge the failure of the previous guidelines to properly reflect the current body of law on 35 U.S.C. § 101, and explicitly state that the "mental steps" doctrine and the "technological arts" test are improper mechanisms for analyzing a claim for patentable subject matter. *See* Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility, Off. Gaz. Pat. Office (Nov. 22, 2005).

Because the present rejection under 35 U.S.C. § 101 is clearly based on a misunderstanding of law on the part of the Examiner, Appellants respectfully request that the Board withdraw the improper rejection of claims 1-25 under 35 U.S.C. § 101.

B. **Ground of Rejection No. 2:**

The Examiner improperly rejected claims 1-50 under 35 U.S.C. § 102(e) as anticipated by the Siegel et al. reference. Appellants respectfully traverse this rejection.

Legal Precedent

Anticipation under Section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under Section 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). Moreover, the prior art reference also must show the *identical* invention "*in as complete detail as contained in the ... claim*" to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989) (emphasis added). Accordingly, Appellants need only point to a single element not found in the cited reference to demonstrate that the cited reference fails to anticipate the claimed subject matter.

Secondly, if the Examiner relies on a theory of inherency, the extrinsic evidence must make clear that the missing descriptive matter is *necessarily* present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. *In re Robertson*, 169 F.3d 743, 49 U.S.P.Q.2d 1949 (Fed. Cir. 1999) (emphasis added). The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient. *Id.* In relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic *necessarily* flows from the teachings of the applied prior art. *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). The Examiner, in presenting the inherency argument, bears the evidentiary burden and must adequately satisfy this burden. *See id.*

Deficiencies of the Rejection of Claims 1-10, 26-29, 38, 40, 43, and 45-47

Turning now to the present claims, and first discussing claims 1-10, 26-29, 38, 40, 43, and 45-47, the Siegel et al. reference fails to disclose each element of these claims. For instance, representative independent claim 1 recites steps for collecting data and comparing it to a reliability curve, and "*calculating a service interval for the device based at least upon the comparison of the one or more data points and the reliability curve*" (emphasis added). The other claims of the group defined above also contain similar recitations. Because the Siegel et al. reference fails to disclose the calculating of a service interval based on such a comparison, the Siegel reference fails to anticipate independent claim 1.

The Siegel et al. reference is generally directed to an automated self-learning diagnostic system and method for use with networked machines. Page 1, paragraph [0002]; page 2, paragraph [0022]. Particularly, the Siegel et al. system utilizes data relating to both a specific component and a population of components as a training set *to adjust threshold parameters* in the detection and diagnostics algorithms. Page 2, paragraph [0022]. The Siegel et al. process includes launching a product with an initial set of diagnostics thresholds 210. Page 3, paragraph [0034]. Siegel et al. also disclose collecting performance data (step 250) from machines 240 in the field and checking (step 260) service records 270 to make sure machine failures are not going undetected. *Id.* Subsequently, adjustments may be made to the algorithm to improve performance (step 280) and feedback may be provided to engineering and product divisions (step 290). *Id.*

In the Final Office Action, with respect to the calculating of a service interval based upon the comparison of data to a reliability curve, the Examiner only states:

> As for calculating service interval for the device based upon the comparison of the data points and reliability curve is Sigel [*sic*] inherently includes a curve-fitted date points because a statistical distribution of performance data, as noted in Fig. 2, step 230 is data points on a table or a curve format and the operation of self-learning diagnostic system consists of checking machine or device service records for undetected failures and

> adjust diagnostic thresholds using correlations of data (see Siegel, page 4, paragraph 35 and Fig. 2, steps 210-290).

Final Office Action mailed September 14, 2005, pages 3-4 (errors in original). Appellants respectfully note that the Examiner's contentions with respect to the calculating step fail to adequately address the step of "calculating a service interval for the device based at least upon the comparison of the one or more data points and the reliability curve" recited by the present claims, and that the cited reference fails to teach this element.

The Examiner argues that this element is inherently taught by the Siegel et al. reference because a passage of the reference teaches checking machine or device service records for undetected failures and updates diagnostic thresholds using correlations of data. Final Office Action mailed March 11, 2005, pg. 3-4; *see also* Siegel et al., page 4, paragraph [0035]. This assertion of inherent disclosure, however, is erroneous. As noted above, Siegel et al. teach a process for setting threshold parameters for a device, and updating these threshold parameters based on subsequently acquired data. Page 3, paragraph [0034]. Service records are checked to ensure that the parameters are being properly updated. *Id.* At best, the cited reference teaches the updating of device thresholds based on performance data and service records. There is nothing in the cited reference that discloses, either explicitly or inherently, the calculation of a service interval at all, let alone making such a calculation based on a comparison of device data to performance data of a population of similar devices.

With respect to the allegedly inherent disclosure, Appellants respectfully submit that the Examiner has failed to meet his evidentiary burden with respect to such a theory of inherency as outlined above. To this point, the Examiner has not provided *any* evidence or rationale as to why such calculation of a service interval is *necessarily* present in the cited reference. Appellants respectfully note that checking service records may be performed without calculating a service interval and, consequently, that calculating a service interval does not *necessarily* follow from the mere checking of service records. For at least these reasons, the Siegel et al. reference also fails to disclose, either explicitly or inherently, "calculating a service interval for the device based at least upon the comparison of the one or more data points and the reliability curve" as recited by independent claim 1.

Because the Siegel et al. reference fails to disclose each and every element, the cited reference simply cannot anticipate independent claim 1. As a result, independent claim 1, as well as its dependent claims, is believed allowable over the prior art. Further, as noted above, claims 26-29, 38, 40, 43, and 45-47 each contain recitations similar to those of independent claim 1 and are also believed to be allowable over the Siegel et al. reference for the same reasons provided above. Consequently, independent claims 26, 38, 40, 43, and 45, in addition to their respective dependent claims, are believed equally allowable over the art of record.

Deficiencies of the Rejection of Claims 11-17, 30-33, 39, 41, 44, and 48-50

The Siegel et al. reference also fails to disclose each element of claims 11-17, 30-33, 39, 41, 44, and 48-50. For instance, representative claim 11 recites, "*calculating a service interval* for each data source by at least comparing the one or more data points from the data sources and at least one associated reliability curve" (emphasis added). Additionally, independent claim 11 also recites, "selecting an optimal service interval from the plurality of service intervals." The Siegel et al. reference fails to disclose these elements; consequently, the cited reference fails to support a case of anticipation with respect to this group of claims.

As discussed above with respect to independent claim 1, the Siegel et al. reference fails to disclose "calculating a service interval," as recited by representative claim 11 and the other claims of this group. As a result of this deficiency alone, the Siegel et al. reference cannot teach "calculating a service interval for each data source by at least comparing the one or more data points from the data sources and at least one associated reliability curve" and, thus, fails to anticipate the present claims.

However, the Siegel et al. reference is further deficient in that it also fails to in any way disclose "selecting an optimal service interval from the plurality of service intervals." In fact, in the Final Office Action, the Examiner aggregately rejected every independent claim of the present application, providing a rationale for only those elements recited by independent claim 1. *See* Final Office Action mailed September 14, 2005, pages 3-4. Consequently, the Examiner has not pointed to a single passage of the Siegel et al. reference that discloses "selecting an optimal service interval from the plurality of service intervals," and, indeed, has not even made a particular allegation that this recitation is taught by the cited reference. As noted immediately above, the Siegel et al. reference fails to teach calculating a single service interval. Consequently, Appellants respectfully submit that the cited reference cannot be reasonably considered to even teach calculating a plurality of service intervals, let alone teach selecting an optimal service interval from such a plurality.

Based on these deficiencies, Appellants respectfully assert that the Siegel et al. reference fails to anticipate independent claim 11 or its dependent claims. Furthermore, Appellants also note that each of independent claims 30, 39, 41, 44, and 48 contains recitations similar to those of independent claim 11. The Siegel et al. reference, therefore, also necessarily fails to anticipate these independent claims, as well as their respective dependent claims. As a result, Appellants respectfully submit that claims 11-17, 30-33, 39, 41, 44, and 48-50 are allowable over the prior art of record and are believed to be in condition for allowance.

Deficiencies of the Rejection of Claims 18-25, 34-37, and 42

Appellants also respectfully submit that the Siegel et al. reference similarly fails to disclose each element of claims 18-25, 34-37, and 42. For instance, representative independent claim 18 recites, "*calculating a service interval* for each device by at least comparing the one or more data points associated with the device and at least one associated reliability curve" (emphasis added). Moreover, representative claim 18 also recites, "selecting an optimal service interval for one or more of the devices from the plurality of service intervals." The Siegel et al. reference fails to disclose these elements and, therefore, fails to anticipate independent claim 18.

As generally outlined above with respect to independent claims 1 and 11, the Siegel et al. reference absolutely fails to teach several elements of independent claim 18, including "calculating a service interval," or "selecting an optimal service interval ... from the plurality of service intervals." Additionally, as also discussed above, the Examiner has not even provided a scintilla of support for the rejection with respect to the latter element. Consequently, Appellants respectfully submit that independent claim 18 and its dependent claims 19-25 are patentable over the Siegel et al. reference. Appellants further note that claims 34-37 and 42 each contain recitations similar to those of independent claim 18. Consequently, the Siegel et al. reference also fails to anticipate claims 34-37 and 42. As a result, claims 18-25, 34-37, and 42 are allowable over the Siegel et al. reference and are believed to be in condition for allowance.

In light of the forgoing remarks, Appellants respectfully request that the Board withdraw the anticipation rejection in relation to claims 1-50. Additionally, Appellants respectfully request that the Board direct the Examiner to allow the instant claims.

8. APPENDIX OF CLAIMS ON APPEAL

Listing of Claims:

1. A method for determining a service interval for a device comprising:

collecting one or more data points regarding a device;

comparing the one or more data points to at least one associated reliability curve for a population of similar devices; and

calculating a service interval for the device based at least upon the comparison of the one or more data points and the reliability curve.

2. The method of claim 1, wherein the device comprises medical equipment.

3. The method of claim 2, wherein the medical equipment comprises a patient monitor.

4. The method of claim 2, wherein the medical equipment comprises a diagnostic imaging system.

5. The method of claim 1, wherein the device is a component of a complex machine.

6. The method of claim 1, wherein calculating the service interval comprises evaluating data collected from at least one of:

a run time meter;

a cycle counter;

a continuous system monitor; or

a self-test monitor.

7. The method of claim 1, wherein at least one reliability curve is derived from a database of repair records for a population of similar devices.

8. The method of claim 1, wherein calculating a service interval is dependent upon at least one of:

the age of the device;

the repair history the device;

the workflow associated with the location of the device;

the traffic level associated with the location of the device;

the criticality associated with the device; or

the environment in which the device operates.

9. The method of claim 1, wherein the one or more data points comprise operational data.

10. The method of claim 1, wherein the one or more data points comprise non-operational data.

11. A method for selecting a service interval from a plurality of service intervals, comprising:

collecting one or more data points regarding a device from a plurality of data sources;

calculating a service interval for each data source by at least comparing the one or more data points from the data sources and at least one associated reliability curve; and

selecting an optimal service interval from the plurality of service intervals.

12. The method of claim 11, wherein the device comprises medical equipment.

13. The method of claim 11, wherein the one or more data points are collected from at least one of:

a run time meter;

a cycle counter;

a continuous system monitor; or

a self-test monitor.

14. The method of claim 11, wherein at least one reliability curve is derived from one or more repair records for a population of similar devices.

15. The method of claim 11, wherein calculating a service interval is dependent upon at least one of:

the age of the device;

the repair history of the device;

the workflow associated with the location of the device;

the traffic level associated with the location of the device;

the criticality associated with the device; or

the environment in which the device is operated.

16. The method of claim 11, wherein the one or more data points comprise operational data.

17. The method of claim 11, wherein the one or more data points comprise non-operational data.

18. A method for determining service intervals for a plurality of devices comprising:

collecting one or more data points regarding a plurality of devices;

calculating a service interval for each device by at least comparing the one or more data points associated with the device and at least one associated reliability curve; and

selecting an optimal service interval for one or more of the devices from the plurality of service intervals.

19. The method of claim 18, wherein at least one of the devices comprises medical equipment.

20. The method of claim 18, wherein at least one of the devices is a component of a complex machine.

21. The method of claim 18, wherein selecting an optimal service interval comprises comparing the service intervals of each device.

22. The method of claim 18, wherein calculating a service interval comprises evaluating data collected from at least one of:

a run time meter;

a cycle counter;

a continuous system monitor; or

a self-test monitor.

23. The method of claim 18, wherein calculating a service interval is dependent upon at least one of:

the age of a device;

the repair history of a device;

the workflow associated with the location of the device;

the traffic level associated with the location of the device;

the criticality associated with the device; or

the environment in which a device operates.

24. The method of claim 18, wherein the one or more data points comprise operational data.

25. The method of claim 18, wherein the one or more data points comprise non-operational data.

26. A system for determining a service interval for a device comprising:

a computer; and

a device connected to the computer through a network and configured to collect one or more data points regarding a device, compare the one or more data points to at least one associated reliability curve for a population of similar devices, and calculate a service interval for the device based at least upon the comparison of the one or more data points and the reliability curve.

27. The system of claim 26, further comprising at least one of:

a run time meter;

a cycle counter;

a continuous system monitor; or

a self-test monitor.

28. The system of claim 26, wherein the computer and the device are networked to a server.

29. The system of claim 28, wherein the server contains reliability data for a population of similar devices.

30. A system for determining a service interval from a plurality of service intervals comprising:

a computer; and

a device connected to the computer through a network and configured to collect one or more data points regarding a device from a plurality of data sources, calculate a service interval for each data source by at least comparing the one or more data points from the data sources and at least one associated reliability curve, and select an optimal service interval from the plurality of service intervals.

31. The system of claim 30, further comprising at least one of:

a run time meter;

a cycle counter;

a continuous system monitor; or

a self-test monitor.

32. The system of claim 30, wherein the computer and the device are networked to a server.

33. The system of claim 32, wherein the server contains reliability data for a population of similar devices.

34. A system for determining service intervals for a plurality of devices comprising:

a computer; and

a plurality of devices connected to the computer through a network and configured to collect one or more data points regarding a plurality of devices, calculate a service interval for each device by at least comparing the one or more data points associated with the device and at least one associated reliability curve, and select an optimal service interval for one or more of the devices from the plurality of service intervals.

35. The system of claim 34, further comprising at least one of:

a run time meter;

a cycle counter;

a continuous system monitor; or

a self-test monitor.

36. The system of claim 34, wherein the computer and the devices are networked to a server.

37. The system of claim 36, wherein the server contains reliability data for populations of similar devices.

38. A system for determining a service interval for a device comprising:

means for collecting one or more data points regarding a device;

means for comparing the one or more data points to at least one associated reliability curve for a population of similar devices; and

means for calculating a service interval for the device based at least upon the comparison of the one or more data points and the reliability curve.

39. A system for determining a service interval from a plurality of service intervals comprising:

means for collecting one or more data points regarding a device from a plurality of data sources;

means for calculating a service interval for each data source by at least comparing the one or more data points from the data sources and at least one associated reliability curve; and

means for selecting an optimal service interval from the plurality of service intervals.

40. A computer program for determining a service interval for a device comprising:

a computer readable medium configured to store machine executable code; and

a computer program stored on the medium, the program comprising executable routines for collecting one or more data points regarding a device, comparing the one or more data points to at least one associated reliability curve for a population of similar devices, and calculating a service interval for the device based at least upon the comparison of the one or more data points and the reliability curve.

41. A computer program for determining a service interval from a plurality of service intervals comprising:

a computer readable medium configured to store machine executable code; and

a computer program stored on the medium, the program comprising executable routines for collecting one or more data points regarding a device from a plurality of data sources, calculating a service interval for each data source by at least comparing the one or more data points from the data sources and at least one associated reliability curve, and selecting an optimal service interval from the plurality of service intervals.

42. A computer program for determining service intervals for a plurality of devices comprising:

a computer readable medium configured to store machine executable code; and

a computer program stored on the medium, the program comprising executable routines for collecting one or more data points regarding a plurality of devices, calculating a service interval for each device by at least comparing the one or more data points associated with the device and at least one associated reliability curve, and selecting an optimal service interval for one or more of the devices from the plurality of service intervals.

43. A device capable of determining its own service interval comprising:

means for collecting one or more data points regarding a device;

means for comparing the one or more data points to at least one associated reliability curve for a population of similar devices; and

means for calculating a service interval for the device based at least upon the comparison of the one or more data points and the reliability curve.

44. A device capable of determining a service interval from a plurality of service intervals comprising:

means for collecting one or more data points regarding a device from a plurality of data sources;

means for calculating a service interval for each data source by at least comparing the one or more data points from the data sources and at least one associated reliability curve; and

means for selecting an optimal service interval from the plurality of service intervals.

45. A device comprising:

an operator interface unit; and

a processor unit, wherein the processor unit is configured to collect one or more data points regarding a device, compare the one or more data points to at least one associated reliability curve for a population of similar devices, and calculate a service interval for the device based at least upon the comparison of the one or more data points and the reliability curve.

46. The device of claim 45, further comprising at least one of:

a run time meter;

a cycle counter;

a continuous system monitor; or

a self-test monitor.

47. The device of claim 45, wherein the processor is further configured to calculate a service interval based on at least one of:

the age of the device;

the repair history the device;

the workflow associated with the location of the device;

the traffic level associated with the location of the device;

the criticality associated with the device; or

the environment in which the device operates.

48. A device comprising:

an operator interface unit; and

a processor unit, wherein the processor unit is configured to collect one or more data points regarding a device from a plurality of data sources, calculate a service interval for each data source by at least comparing the one or more data points from the data sources and at least one associated reliability curve, and select an optimal service interval from the plurality of service intervals.

49. The device of claim 48, further comprising at least one of:

a run time meter;

a cycle counter;

a continuous system monitor; or

a self-test monitor.

50. The device of claim 48, wherein the processor is further configured to calculate a service interval based on at least one of:

the age of the device;

the repair history the device;

the workflow associated with the location of the device;

the traffic level associated with the location of the device;

the criticality associated with the device; or

the environment in which the device operates.

9. APPENDIX OF EVIDENCE

N/A

10. APPENDIX OF RELATED PROCEEDINGS

N/A